US006297140B1

(12) **United States Patent**
Uzoh et al.

(10) **Patent No.: US 6,297,140 B1**
(45) **Date of Patent: *Oct. 2, 2001**

(54) **METHOD TO PLATE C4 TO COPPER STUD**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **09/389,232**

(22) Filed: **Sep. 3, 1999**

Related U.S. Application Data

(62) Division of application No. 09/004,808, filed on Jan. 9, 1998, now Pat. No. 6,251,528.

(51) **Int. Cl.**[7] **H01L 21/44**

(52) **U.S. Cl.** **438/612**; 438/613; 438/614; 438/627; 438/629; 438/637; 438/643; 438/653; 438/674; 438/675; 438/676; 438/677; 438/678; 438/687

(58) **Field of Search** 438/612, 613, 438/614, 625, 627, 629, 637, 643, 648, 653, 656, 666, 669, 671, 674, 675, 676, 677, 678, 685, 687

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(57) **ABSTRACT**

A method for plating a second metal directly to a first metal without utilizing a mask. A semiconductor substrate is provided including at least one metal feature and at least one insulating layer covering the metal feature and the substrate. At least one recess is formed in the at least one insulating layer thereby exposing at least a portion of the metal feature. At least one conductive barrier layer is formed over the insulating layer and the exposed portion of the metal feature. A plating seed layer of a first metal is formed over the at least one barrier layer. A photoresist layer is deposited over the plating seed layer. Portions of the photoresist layer and portions of the plating seed layer outside of the at least one recess are removed. Photoresist remaining in the at least one recess is removed. A second metal is electroplated to the plating seed layer in the recess, using the barrier layer to conduct electrical current.

23 Claims, 2 Drawing Sheets